CLAIMS

1. An Impedance cell sizing apparatus for characterizing particles suspended in a liquid, comprising a housing with a mixing chamber and a collection chamber separated by a membrane containing an orifice for passage of the particles between the mixing chamber and the collection chamber for impedance determination of the particles

   c h a r a c t e r i z e d in that

   the membrane is a polymer membrane.

2. An Impedance cell sizing apparatus according to claim 1, wherein the orifice has rounded edges at one of the sides of the membrane whereby perturbations of an electrical field at the orifice entrance are minimised and a substantially homogenous electrical field at the centre of the orifice may be provided.

3. An Impedance cell sizing apparatus according to claim 2, wherein the radius of curvature of the rounded edges is substantially equal to ¼'th the diameter of the orifice.

4. An Impedance cell sizing apparatus according to claim 1 or 2, wherein the surface roughness of the internal surface of the orifice is in the range from 0 µm to 5 µm whereby a substantially homogenous electrical field at the centre of the orifice may be provided.

5. An Impedance cell sizing apparatus according to any of the preceding, wherein the deviation of the orifice diameter along a longitudinal axis of the orifice is within the range from +/-1% to +/- 10% whereby a substantially homogenous electrical field at the centre of the orifice may be provided.

6. An Impedance cell sizing apparatus according to any of the preceding claims, wherein the membrane is positioned in a single-use cartridge.

7. An Impedance cell sizing apparatus according to any of the preceding claims, further comprising

   a bore in the outer surface of the housing for entrance of the liquid sample, communicating with

   a sampling member positioned in the housing for sampling the liquid sample and having a cavity for receiving and holding the liquid sample, the member being movably positioned in relation to the housing in such a way that, in a first position,

the cavity is in communication with the bore for entrance of the liquid sample into the cavity, and, in a second position, the cavity is in communication with the mixing chamber for discharge of the liquid sample into the mixing chamber.

8. A membrane with an orifice for positioning in an Impedance cell sizing apparatus for characterizing particles suspended in a liquid, comprising a housing with a mixing chamber and a collection chamber separated by the membrane with the orifice for passage of the particles between the mixing chamber and the collection chamber for impedance determination of the particles

c h a r a c t e r i z e d in that

the membrane is a polymer membrane.

9. A membrane according to claim 8, wherein the orifice has rounded edges at one of the sides of the membrane whereby perturbations of an electrical field at the orifice entrance are minimised and a substantially homogenous electrical field at the centre of the orifice may be provided.

10. A membrane according to claim 10, wherein the radius of curvature of the rounded edges is substantially equal to ¼'th the diameter of the orifice.

11. A membrane according to any of claims 8-10, wherein the surface roughness of the internal surface of the orifice is in the range from 0 µm to 5 µm whereby a substantially homogenous electrical field at the centre of the orifice may be provided.

12. A membrane according to any of claims 8-11, wherein the deviation of the orifice diameter along a longitudinal axis of the orifice is within the range from +/-1% to +/- 10% whereby a substantially homogenous electrical field at the centre of the orifice may be provided.

13. A method of producing an orifice in a polymer membrane by precision machining.

14. A method of producing an orifice in a polymer membrane by aiming a laser beam towards the desired position of the orifice at the polymer membrane for laser cutting of the orifice.

15. A method according to claim 14, wherein the laser is a UV-laser.

16. A method according to claim 15, wherein the UV-laser is an excimer laser with a wavelength in the range from 150 nm to 350 nm.

17. A method according to any of claims 14-16, wherein the laser beam is kept stationary at the desired position of the orifice during laser cutting of the orifice.

18. A method according to any of claims 14-17, wherein the laser beam is scanned along the desired circumference of the orifice thereby cutting-out the orifice of the membrane.

19. A method according to any of claims 14-17, wherein the laser beam is scanned across the surface of the membrane desired to be removed for creation of the orifice.

20. A method according to claim 19, wherein the laser beam is scanned linearly across the surface.

21. A method according to any of claims 14-20, wherein the diameter of the laser spot at the polymer membrane is less than 5 μm.